

Customer No.: 31561
Application No.: 10/710,820
Docket No.: 12419-US-PA

To the Claims:

1. (currently amended) A method of expanding an redundant array of independent disks (RAID), wherein the RAID comprises M number of storage devices, and each of the storage devices comprises N number of storage blocks, wherein M is two or more positive integer number and N is a positive integer, which are defined as:

$D_{I,J}$: the J^{th} data block of the I^{th} storage device;

$P_{I,J}$: the J^{th} data block of the I^{th} storage device, being a parity data block;

wherein, I is a positive integer of $1 \sim M$, J is a positive integer of $1 \sim N$, and the arrangement order of the storage devices-parity block is: if $D_{I,J,X,Y} = P_{I,J,X,Y}$, then $D_{I,J+1,X-1,Y+1} = P_{I,J+1,X-1,Y+1}$, wherein X-1 is an integer in the range of 1~M, and Y+1 is an integer in the range of 1~N, the method comprising:

providing an expansive storage device;

disposing the expansive storage device in front of the 1st storage devices, wherein the Y^{th} data block of the expansive storage device is represented as $D_{0,Y,J}$; and sequentially moving the $D_{I,J}$ data blocks except $P_{I,J}$, wherein I is an integer of 0 ~ M, Y is a positive integer of 1 ~ N, and if $D_{X,Y} = P_{X,Y}$, then $D_{X-1,Y+1} = P_{X-1,Y+1}$, and wherein X is a positive integer of 0 ~ M when X-1 is an integer in the range of 0~M, and Y+1 is an integer in the range of 1~N.

2. (original) The method of expanding RAID of claim 1, wherein the step of sequentially moving $D_{I,J}$ further comprises sequentially moving $D_{I,J}$ in an ascending order based on the sequence of an I value.

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3. (original)The method of expanding RAID of claim 1, wherein the step of sequentially moving $D_{I,J}$ further comprises sequentially moving $D_{I,J}$ in an ascending order based on the sequence of a J value.

4. (currently amended)A method of expanding an redundant array of independent disks (RAID), wherein the RAID comprises M number of storage devices, and each of the storage devices comprises N number of storage blocks, wherein M is two or more positive integer number and N is a positive integer, which are defined as:

$D_{I,J}$: the Jth data block of the Ith storage device;

$P_{I,J}$: the Jth data block of the Ith storage device, being a parity data block;

wherein, I is a positive integer of 1 ~ M, J is a positive integer of 1 ~ N, and a same Jth data block in the storage devices comprises at least a parity data block, the method comprising:

providing an expansive storage device;

disposing the expansive storage device in front of the 1st storage devices, and the Yth data block of the expansive storage device is represented as $D_{0,Y}$; and

sequentially moving the $D_{I,J}$ data blocks except $P_{I,J}$, wherein Y is a positive integer of 1 ~ N, and the positions of the parity data block of the same Jth data block in the storage devices are the same.

5. (original)The method of expanding RAID of claim 4, wherein the step of sequentially moving $D_{I,J}$ further comprises sequentially moving $D_{I,J}$ in an ascending order based on the sequence of an I value.

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6. (original)The method of expanding RAID of claim 4, wherein the step of sequentially moving $D_{i,j}$ further comprises sequentially moving $D_{i,j}$ in an ascending order based on the sequence of a J value.

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